

REVIEW

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Education, sustainability and social learning

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Abstract

This article proposes a contribution to the existing debate on social learning as a possible framework that strengthens the role of sustainable actions through educational initiatives as to promote changes in behavior and attitudes in a collective perspective. Sustainability as a new basic and integrative criterion may strengthen collective and solidary values that through contextualized and problem focused educational practices can mobilize students and practitioners to action-reflection-action initiatives on the challenges posed by transformations on environmental issues. Social learning as an approach for the understanding and management of environmental issues has become a relevant interpretative framework in the assessment and management of natural resources. This has implied in a continuous reshaping of the usual roles taken by scientists, policy makers, and citizens in the governance of sustainability. Within this perspective the paper establishes a dialogue with the current literature on education for sustainability from a perspective that dialogues with social learning and adaptive management. Our approach indicates the need of changes to advance in the capacity building of leaderships focused in the premises that lead to the construction of a sustainable society. Universities, NGOs and companies have gradually joined this movement in pursuing more sustainable practices. New arrangement of stakeholders based on cooperation, information exchange, dialogue, and of course, financing, that includes Universities, NGOs and companies is vital for the construction of a new paradigm which must stimulate interdisciplinarity, transversality and more integrated and complex society world views, strengthening ethical and socioenvironmental responsibility.

Keywords: Education, Sustainability, Social learn, Sustainable development, ESD, Education for sustainability, Learning skills, Education for sustainable development

Background

The transition to a more sustainable society is permeated by conflicts. Social institutions are constantly charged for the predatory natural resources use, generating vulnerability, socio-environmental injustice and poverty, promoting unsustainability.

Since Rachel Carson's publication of *Silent Spring* in 1962, knowledge of environmental degradation and its overall impacts in society, education associated with the environment initiatives has continuously grown as a means of questioning and redefining development and aligning it with socioecological limits. Global society has become increasingly aware of environmental degradation and the significant risks that have been

accumulating. In this direction, the number of scholars, practitioners, environmental activists, policy makers, teachers and others have been addressing problems and developed a multitude of sustainability practices in general and through education at various levels in particular.

Crutzen calls the new Era we are living in as “Anthropocene”—a new geologic epoch in which humankind has emerged as a globally significant—and potentially intelligent—force capable of reshaping the face of the planet (Crutzen 2002).

Looking closely to this new era, it is clear that the logic of production and consumption has reached levels that make it more and more necessary to rethink the way global society and its human lifestyle and production of waste. In this direction, and based on multi-disciplinary research into the nature and causes of environmental degradation, it represents a meaningful way to encompass a new vision of education that seeks to empower people to assume responsibility for creating a sustainable future.

Hence, that implies the need to stimulate dialogue and a more active societal participation in the recognition of the complex nature of these contemporary socio-environmental problems; in order to critically reflect about its consequences, including human health issues, establishing common goals and shared solutions. The values of sustainability have been built through the last decade in a process that articulates complexity, diversity and coverage and represents the consolidation of a new paradigm.

Sustainability as a new integrative and basic criteria, would strengthen collective and solidary values through contextualizing and problematizing education practices which, guided by the complexity paradigm, are able to create a real cycle of action-reflection-action related to socio-environmental challenges.

Within this reflexive and engaged educational proposal, focused in knowledge and doings with and not for “learners and teachers”, the challenge presented is to develop, in the institutional spaces of education, new epistemologies that enable a “reform of thinking”. It is to education the role to create spaces of conviviality that initiate structural changes reciprocally congruent, in a mutual relation of interdependence, of adaptation and ecosystemic organization.

Conceptual framework

Sustainability and social learning

Social learning as an approach for the understanding and management of environmental issues has become a relevant interpretative framework in the assessment and management of natural resources (Tabara and Pahl-Wostl 2007). Since the 1970s, the notion of social learning has been gaining attention in many fields of knowledge, and the work of Bandura (1977) is innovative although it focus on individual learning as based on the observation of the behaviors of others, which results from social interaction within a group, assuming an iterative feedback between the learner and his/her environment. This has implied in a continuous reshaping of the usual roles taken by scientists, policy makers, and citizens in the governance of sustainability. Within this perspective, our approach dialogues with adaptive management, implying in the incorporation of action-reflection-action initiatives into the routines of organizations in charge of the management of social-ecological systems. The adaptation of social-ecological implies in a type of learning that strengthens the role of managing systems of knowledge, social capital

and collaboration between stakeholders to promote the capacity to adapt to change (Folke et al. 2005).

Considering that we are living in an era of uncertainty and multiplication of complex and wicked issues linked to necessary transformations in the use of energy, water and biodiversity and that in the last 50 years many wrongdoings were part of the prevailing logics of society, there is an unquestionable need to think paradigms. There is a need of multiplying sustainable practices and this implies according to Wals (2015) that from such a learning perspective, the need to translate the lessons learnt into a re-thinking of actions as a system re-design and within a transitional perspective.

This implies in an active involvement within society (Wildemeersch et al. 1998) stressing the importance of creating adequate conditions. Keen et al. (2005) have defined social learning as “the collective action and reflection that takes place amongst both individuals and groups when they work to improve the management of the interrelationships between social and ecological systems” (p. 4).

As to promote social innovation and advance to transitional processes the challenge is to develop anticipatory thinking and other means associated with systems thinking, and inter-personal skills and attitudinal changes associated with cooperation, solidarity and leading role within a critical approach, that demands multi-stakeholder engagement and changing mind-sets.

Education for sustainability and social learning

Over the last decade, terms such as adaptive management, collaborative management, participation, citizen involvement, collaborative management, community participation, communities of practice, dialogue, multi-stakeholder processes, communities of practice, interactive decision-making and social learning have proliferated in the natural resources management literature (Berkes et al. 2003; Carlsson and Berkes 2006; Folke et al. 2005; Wals 2007, 2015; Wenger 2000). The different approaches on platforms that engage multiple stakeholders recognize that one group alone will never solve most complex problems. Multi-stakeholder processes enable different perspectives be presented and debated, scenarios and options be evaluated, decisions taken and action implemented. Such processes involve working with all the complexities of how humans interact—culturally, socially, politically and economically (Woodhill 2004).

The approach of Social Learning within the analysis of complex socio-environmental problems has been an important issue within the conceptualization of some projects as it has been recognized that command and control strategies are inadequate to address change in a complex system in which multiple stakeholders interact with dynamic ecological systems.

In this direction Education for Sustainability is an excellent field of knowledge to expand the growing capacity of social entities to perform common tasks related with sustainable initiatives, as it refers to both the learning process and to its outcome.

These trends associated to the concept of Social Learning must be considered in the planning, execution and evaluation on programs, courses and projects on Education for Sustainability.

In recent years the value of stakeholder and public participation as part of a process of education for sustainability has been increasingly recognized in policy fields, and in

natural resources management, a field that has had a strong tradition in the engineering and technical sciences, the important role of such participation has received growing attention. This increased awareness related to the insight that improved governance and integrated solutions is required to deal with the complexity of today's environmental related problems.

In this direction, participatory methods can be applied to very different areas as education, organization, media and communication, health and appropriate technologies. At Universities, these methods constitute issues related to teaching and research, and to a greater extent, to extra-curricular or community projects.

Universities, NGOs and companies have gradually engaged in pursuing more sustainable practices. New arrangement of stakeholders based on cooperation, information exchange, dialogue, has been vital for the construction of a new paradigm which must stimulate interdisciplinarity, transversality and more integrated and complex society world views, as to strengthen ethical and socio-environmental responsibility.

A Social Learning perspective potentially strengthens the role of cultural values or institutional settings (Mostert 2003) and implies a change in governance style towards more collaboration and a different role of information as a means to support communication instead of just providing expert advice. Active involvement of stakeholders and the public at large can result in social learning, and this is important for achieving integrated resource management. Stakeholders need to be well informed and learn new skills in order to maximize the benefits of their participation.

Unesco (2008) suggests that a common aim of education initiatives should be clearly to relate practice more closely to theory. Generally, the aim of sustainability teaching is to acquire various skills, critical and creative thinking, communication, conflict management and problem solving strategies, project assessment to the students and participants. Within an educational process, Wenger describes learning as "interplay between social competence and personal experience nicely captures the complexity of learning. It is a dynamic two-way relationship, between people and the social learning systems, in which they participate. It combines personal transformation with the evolution of social structures" (Wenger 2000, p. 227).

As to promote changes in behavior and attitudes in a collective perspective, the role of education is strategic and new forms of learning and engagement all have in common that the issues at hand cannot be solved, but can only be improved. This implies the challenge for deeper thinking, as part of a transition towards a world that is more sustainable. Within this perspective, the challenge is to promote a different way of teaching and learning process emphasizing new principles and values, as well as pressure for learning.

Promoting action and change

According to Peter and Wals (2013), there is an increasing requirement to promote forms of education and learning, to be more responsive to the risk society and its sustainability challenges. This scenario includes a range of associated forms of learning, which include different approaches, based on social learning principles as transformative learning (Mezirow and Taylor 2009), cross-boundary learning (Levin 2004), anticipatory learning (Tschakert and Dietrich 2010), action learning (Pedler 2011), social learning

(Pahl-Wostl and Hare 2004; Keen et al. 2005; Wals 2007; Jacobi et al. 2014; Jacobi 2012; Jacobi et al. 2012).

In the 8th World Environmental Education Congress—WEEC—an international congress addressing education for environment and sustainable development that took place in Gothenburg, Sweden, between June 29 and July 2, 2015. This meeting emphasized some issues that dialogue directly with the main goal of this article, the need to re-orient teaching and learning to deal with inter-connected sustainability challenges such as climate change, loss of biodiversity, loss of food and nutrition security, continued pollution of air, water and soils, that are rapidly and thus becoming the key issues of our time. This demands an increase of the role of learning niches and capacity building for different social and economic actors. Education for Sustainability enlarges possibilities of education and learning to actively engage citizens, thus requiring a rethinking of the values and relations, and opening up possibilities to develop alternative wants that do not compromise the carrying capacity of the Earth and the well being of people and the non-human and more than human world. As to cope with this purpose environmental and sustainability education needs to be critical and transformative offered a wide spectrum of possibilities for education and learning for a transition towards a healthier, more equitable and balance way of living. The means for this to advance is a by discovering, (re)connecting, questioning, disrupting, experimenting, reflecting and, indeed, continuous learning (WEEC 2015).

In September 2015, the Sustainable Development Goals were adopted, emphasizing wealth, natural resources and economic activity, among others, implying in the recognition that sustainability goals are crucial to the quality of life of global society.

The fact is that increasingly economic stakeholders are enlarging the educational process as to provide knowledge and worldview that strengthens the need of learning for green jobs in a green society. This is not only driven by economic interests and technological innovations, as companies and governments are beginning to re-orient themselves to new demands for a workforce prepared to work in such an economy. This demands re-orientation of curricula, intellectual engagement in socio-ecological issues, emphasizing methodologies and methods as to share, reflect on and discuss emergent perspectives (WEEC 2015).

Several different approaches for teaching and learning sustainability have been developed during the past decades. Most of them have in common to foster sustainability skills, such as problem solving, critical thinking, action competence and systems thinking, trying to encompass part of the huge diversity and complexity that sustainability presents (Cebrián and Junyent 2015).

Wals and Corcoran (2006) said that Education for Sustainability “means the creation of space for transformative social learning. Such space includes: alternative paths of development; new ways of thinking, valuing and doing; participation; pluralism, diversity and minority perspectives; deep consensus, but also for respectful disagreement (Lijmbach et al. 2002 apud Wals and Corcoran 2006) and differences (Olson and Eoyang 2001 apud Wals and Corcoran 2006); autonomous and deviant thinking; self-determination, and; finally, space for contextual differences”.

According to Sterling (2012) in sustainability discourse and practice, a number of key values have emerged (e.g. equity and justice, social inclusion and meeting basic human

needs, social inclusion and meeting basic human needs, participation and empowerment, eco-efficiency, sustainable consumerism etc.). Planning activities departing from some of these universal and desirable values will allow students to engage in a different level related to a real-world situation and also to students' own interests and values.

In a nutshell, Education for Sustainability is about providing real-world learning opportunities focusing on a shift of current thinking, practices and values, and that should be a core concern for all educational institutional and spaces.

In Brazil, the first decade of the 2000 was marked by the creation of the initial guidelines for the construction of more sustainable educational spaces. Fragmented but important initiatives were implemented in high school institutions, emphasizing environmentalization. This has represented an important social space for reflection, formation and diffusion of new development and sustainability concepts, more widely contributing for the establishment of more just, solidary and environmentally sustainable societies (Oliveira et al. 2007).

In parallel, the program "*Vamos cuidar de do Brasil com escolas sustentáveis*" ("Let's take care of Brazil with Sustainable Schools") has proposed the construction of more sustainable schools focusing on projects considering the interconnections among space, management and curriculum. Those projects must incentivize the creation of a new school community culture. It includes intense dialogues among students, community members, teachers, staff, and managers focusing on improving the quality of life. The establishment of a "*Comissão de Meio Ambiente e Qualidade de vida* (COM-Vida)" (Quality of life and environment commission) is the first step to gradually and permanently readjust the school and community to new sustainable premises (Trajber and Sato 2010).

The last guidelines for sustainable schools and the creation sustainable educational spaces were released by the Brazilian Ministry of Education (MEC) in 2012, stimulating schools and communities in the seek for a more sustainable and just society. According to this document (Brasil 2012) a sustainable school is a place to create and develop permanent and continued educational processes that are able to sensitize all the community to collectively build new knowledge, values, abilities, attitudes and competencies for a more sustainable and environmentally just society. A sustainable school is also inclusive, respect human rights, quality of life and valorizes diversity.

The outcomes of the programme "*Vamos cuidar de do Brasil com escolas sustentáveis*" ("Let's take care of Brazil with Sustainable Schools") were shared in 2013 during the IV National Children and Youth Conference for the Environment. This event brought together in Brasilia approximately 700 students and teachers between 11 and 14 years-old who already had debated different themes in their schools during Municipal and State Conferences. Along the National Conference, they had the chance to socialize their experiences and take part of thematic workshops, according to the Ministry of Education's website (<http://conferenciainfanto.mec.gov.br/2012-05-22-18-30-31>). Several public schools are still receiving funds from the Federal Government to develop their projects related to the construction of more sustainable societies. There is still no provision for the V National Conference and, unfortunately, the last conference formal outcomes (e.g. papers, books, book chapters, etc.) are not still available for the public.

Along with this innovative and challenging proposal considering Brazil's territorial dimension, teacher's education program have being created and applied in several different parts of the country. One of the core characteristics of this program is to stimulate teachers and community to better understand their territory (in the sense of a share place under collective construction) in order to rescue their territorial identity and belonging (Wiziack et al. 2013). This is a very important step to understand yourself, others and the importance of caring.

Final considerations

As we can see, Brazil has taken steps in order to transform the school, the territory and, more importantly, teachers' and school's social role and its relation to the community as a whole. Although, according Fien and Tilbury (2002), the components of this new educational focus need to be continually re-conceptualized, and reflected upon, in response to local, but also national and global change.

Education is a participatory process and must guide people in reflection and action on different interpretations of sustainable development (Huckle 1996). "This process of critical enquiry, encourages people to explore the complexity and implications of sustainability as well as the economic, political, social, cultural, technological and environmental forces that foster or impede sustainable development" (Fien and Tilbury 2002).

At this point, we hope it is possible to glimpse a common ground among education, sustainability and social learning. It is clear that we are living in a special moment of transition between paradigms and it is important to dare and create innovate pedagogical practices oriented by the guidelines of social learning and the values of sustainability.

Authors' contributions

PRJ, RFT and EG carried out the literature review, general paper conceptualizations, theoretical framework and drafted the manuscript. All authors read and approved the final manuscript.

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Competing interests

The authors declare that they have no competing interests.

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